

Identity of the Antarctic mite *Gainia nivalis* Trouessart (Acari, Nanorchestidae)

by Mark JUDSON

Abstract. — The types of *Gainia nivalis* Trouessart, 1914, from Petermann Island (Antarctic Peninsula), have been re-examined and a lectotype designated. *Gainia* Trouessart, 1914, is confirmed to be a junior subjective synonym of *Nanorchestes* Toppent and Trouessart, 1890. *Nanorchestes nivalis* (n. comb.) is a senior subjective synonym of *N. gressitti* Strandmann, 1982 (n. syn.). Authorship of the family name Nanorchestidae is attributed to BERLESE, 1913.

Keywords. — Acari, *Nanorchestes*, *Gainia*, Antarctic.

Identité de l'acararien antarctique *Gainia nivalis* Trouessart (Acari, Nanorchestidae)

Résumé. — Les types de *Gainia nivalis* Trouessart, 1914, provenant de l'île Petermann (Péninsule Antarctique), ont été réexaminés et un lectotype désigné. *Gainia* Trouessart, 1914, est confirmé comme synonyme subjectif de *Nanorchestes* Toppent et Trouessart, 1890. *Nanorchestes gressitti* Strandmann, 1982, est un synonyme subjectif de *N. nivalis* (n. comb., n. syn.). La paternité du nom de famille Nanorchestidae est attribuée à BERLESE, 1913.

Mots-clés. — Acariens, *Nanorchestes*, *Gainia*, Antarctique.

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INTRODUCTION

Mites of the cosmopolitan genus *Nanorchestes* Toppent & Trouessart (Nanorchestidae) form an important and characteristic component of the Antarctic fauna. Of the thirty-or-so species known world-wide, fourteen have been recorded from the Antarctic and sub-Antarctic regions (PUGH, 1993)¹, including the southernmost-living terrestrial arthropod (GRESSITT, 1967a).

The genus *Gainia* was created by TROUESSART (1914) for a new species, *Gainia nivalis* Trouessart, collected from Petermann Island off the coast of the Antarctic Peninsula. TROUESSART placed it in the Alycinae, which at that time contained the genera *Alycus* C. L. Koch, *Michaelia* Berlese, *Nanorchestes* and *Hybolicus* Berlese, stating that the new genus was closest to *Michaelia* (= *Bimichaelia* Thor). WILLMANN (in THOR & WILLMANN, 1941) suggested that *Gainia* might

1. This high proportion of Antarctic species is probably due to the fact that relatively little attention has been paid to the systematics of *Nanorchestes* species from other regions of the world.

be a synonym of *Nanorchestes*, a view reiterated by STRANDTMANN (1967) and PUGH (1993). THERON (1975) listed *Gainia* as a synonym of *Nanorchestes*, without comment.

Because of the inadequacy of the original description, the identity of *Gainia nivalis* has remained doubtful and there have been no further records of this species. GRESSITT (1967b: 382) suggested that *G. nivalis* might be identical with *Nanorchestes antarcticus* Strandtmann. In fact the latter has since been shown to be a polyphyletic assemblage of species (STRANDTMANN, 1982). Fortunately, TROUSSERT's types are still present in the Muséum national d'Histoire naturelle, Paris, and a re-examination of this material shows that it is conspecific with *Nanorchestes gressitti* Strandtmann, 1982, one of the species previously confused with *N. antarcticus*.

Family NANORCHESTIDAE Berlese, 1913²
Genus NANORCHESTES Toppent & Trouessart, 1890

Nanorchestes TOPSENT & TROUSSERT, 1890: 892 (type species *Nanorchestes amphibius* Toppent & Trouessart, 1890, by monotypy).

Gainia TROUSSERT, 1914: 13-14 (type species *Gainia nivalis* Trouessart, 1914, by monotypy); THOR & WILLMANN, 1941: 148. Synonymized by THERON, 1975: 1.

REMARKS

Although *Gainia* is clearly a synonym of *Nanorchestes* as currently recognized, it might perhaps be revalidated in the future. *Nanorchestes* is a relatively large genus, including about 30 species, and might usefully be split into smaller generic or subgeneric taxa. MCDANIEL & BOLEN (1981) named a closely related genus, *Neonanorchestes*, for two North American species with clavate trichobothria *nb*. The validity of *Neonanorchestes* was questioned by BOOTH (1984), but the recent discovery of alternating calyptostasy in this genus (KETHLEY, 1991) suggests that it may be monophyletic. This leaves, however, the question as to whether *Nanorchestes* itself represents a natural group. As both the clavate trichobothria and the alternating calyptostasis of *Neonanorchestes* probably represent autapomorphies, it is possible that the recognition of this genus leaves *Nanorchestes* paraphyletic. At least one species currently placed in *Nanorchestes* – *N. siculus* (Berlese, 1910) – has clavate trichobothria, though its nymphs are as yet unknown.

***Nanorchestes nivalis* (Trouessart) n. comb.**

Gainia nivalis TROUSSERT, 1914: 14, Figs. 8-9; THOR & WILLMANN, 1941: 148-149, Fig. 206; DALENIUS, 1965: 421; GRESSITT, 1967a: 5, Table 2; GRESSITT, 1967b: 382; STRANDTMANN, 1967: 79; BLOCK, 1992: 161, 167; PUGH, 1993: 339.

Nanorchestes antarcticus (not Strandtmann), STRANDTMANN, 1967: 7, Fig. 14g (in part, "variant 4" from South Orkney Islands).

2. Although authorship of the family Nanorchestidae has traditionally been accredited to GRANDJEAN (1937), the tribe Nanorchestini was proposed by BERLESE (1913: 17), who is therefore the author of the co-ordinate family name (ICZN Code, article 36).

Nanorchestes gressitti Strandtmann, 1982d: 253-256, Figs 1-17; CENXUAN & SHIMADA, 1991: 326, 330, Fig. 1D; PUGH, 1993 : 338. **New synonymy.**

MATERIAL EXAMINED. — Lectotype ♂ (MNHN, slide 63B9), paralectotypes 2 ♂, 1 ♀ (MNHN, slide 45C13) and 8 other specimens (MNHN, slides 45B2 and 45C12), all labelled "Charcot, sur neige rouge, I. Petermann, Antarctique." The original identification labels read: "*Gainia nivalis* n. g.- n. sp. (Rostre. Type)" [45B2]; "*Gainia nivalis* Trt. (Téguments)" [45C12]; and "*Gainia nivalis* Trt. (Profil)" [45C13]; each label is also marked with a cross in red pencil.

REMARKS

Although only one of the three original slides was labelled "type", it is clear that all of the specimens are from the original collection and should be regarded as syntypes. The name 'Charcot' on the labels refers to Dr J.-B. CHARCOT, leader of the Second French Antarctic Expedition (1908-1910). Petermann Island (65°10'S 64°10'W) was visited by the expedition in March 1909, where the mites were collected by the expedition's biologist, L. GAIN (TROUESSART, 1914).

The types were in poor condition when TROUESSART received them, and have deteriorated since. They were strongly compressed beneath the coverslips and the mountant had dried out around them, so that little other than their silhouettes can be seen. The four specimens (3 ♂, 1 ♀) on slide 45C13 were temporarily de-mounted and examined in lactic acid; one of these males has been selected as the lectotype and is now mounted on a separate slide (63B9).

Although a complete examination was not possible, sufficient details became visible to show that the types are conspecific with *Nanorchestes gressitti* Strandtmann, known from Anvers Island (Antarctic Peninsula), South Shetland Is, South Orkney Is, South Sandwich Is and South Georgia Is. Apparent discrepancies between the descriptions of TROUESSART (1914) and STRANDTMANN (1982) are due to misinterpretations by TROUESSART. In particular, the form of the chelicerae, trichobothria and the apoteles of the legs are all typical of *Nanorchestes*. The types of *nivalis* agree with STRANDTMANN's description (as *N. gressitti*) in the following :

1. Size: TROUESSART gave the body length as being 0.5 mm, presumably including the gnathosoma. The idiosomal length of the 12 specimens (probably mostly adult) varies from about 320 to 450 µm, though most are between 360 and 400 µm long. STRANDTMANN (1982) records a range of 270-400 µm for adults. Allowing for the compression of the types of *nivalis*, these figures are reasonably similar;

2. "Wings" of naso narrow and widely separated;
3. Trichobothrium *na* long (80 µm), strongly ciliated on distal third; *nb* long (65 µm), finely ciliated, without apical branches;
4. Cheliceral seta *cha* bifurcate, branches roughly equal in length;
5. Anterior seta of telofemur I with only a few, reduced cilia at apex;
6. Tarsus III with 8 setae.

These characters, at least in the case of the specimens examined in detail, rule out the possibility that types of *nivalis* are conspecific with *N. berryi* Strandtmann, a species recorded as being sympatric with *N. gressitti* at two localities on the nearby Anvers Island by STRANDTMANN (1982). However, as it is not possible to state with certainty that the remaining types are all conspecific, it seems prudent to designate a lectotype for *nivalis*.

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